

Claims

1. A sampler for sampling a first portion of a liquid flow,
in which the first portion passes through a valve into a
sample chamber, the valve comprising;

5 a valve inlet coupled to an inlet of the sampler;

a valve outlet opening into the sample chamber, the
10 valve outlet being positioned, in use, substantially
below the valve inlet;

a shut-off chamber separating the valve inlet from the
valve outlet; and
15 a valve overflow leading out of the shut-off chamber.
2. A sampler according to claim 1, in which the valve
outlet is substantially the same shape, in transverse
20 section, as the valve inlet, and is of larger transverse
dimensions.
3. A sampler according to claim 1 or 2, in which the valve
outlet is aligned with the valve inlet.
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4. A sampler according to any preceding claim and further
comprising;

30 a vent tube extending between a vent inlet and a vent
outlet, the vent inlet being positioned within the
sample chamber, and the vent outlet being positioned, in
use, at a level above the valve outlet.

5. A sampler according to claim 4, in which the level of the vent inlet within the sample chamber determines the level of liquid to be collected within the sample chamber in that, in use, the valve closes when liquid in the sample chamber reaches the vent inlet and obstructs it, substantially preventing further venting of air from the sample chamber.
10. A sampler according to claim 4 or 5, in which the vent outlet opens into a vent-tube pocket which extends, in use, upwardly from the shut-off chamber.
15. A sampler according to any preceding claim, in which, after collection of the sample in the sample chamber, further liquid entering the valve during use drains through the valve overflow.
20. A sampler according to any preceding claim, in which the sampler inlet comprises a first-catch reservoir opening into the valve inlet.
25. A sampler according to claim 8, in which the sampler inlet comprises a main overflow positioned, during use, at an upper end of the first-catch reservoir.
30. A sampler according to claim 8 or 9, in which the sampler inlet comprises an entrance funnel opening into the first-catch reservoir, the funnel optionally being provided with a baffle for reducing turbulence within the first-catch reservoir.
35. A sampler according to claim 9, in which the shut-off chamber overflow and the main overflow lead into a common overflow outlet of the sampler.

12. A sampler according to any preceding claim, in which the sample chamber is removable.

5 13. A method for sampling a first portion of a liquid flow using a sampler as defined in any preceding claim, comprising the steps of;

10 operating the sampler so that liquid initially flows through the valve inlet and then passes through the shut-off chamber and the valve outlet;

15 collecting liquid in the sample chamber until it reaches a predetermined level at which the flow of liquid through the valve outlet is disrupted so that it touches and wets the wall of the valve outlet, blocks the valve outlet and shuts the valve, preventing further flow of liquid into the sample chamber; and

20 diverting further liquid flowing through the valve inlet to flow through the shut-off chamber and the valve overflow.

14. A method according to claim 13, in which the predetermined level is at an exit of the valve outlet, the liquid flow being disrupted by the liquid in the sample chamber covering the exit of the valve outlet.

15. A method according to claim 13 or 14, using a sampler which further comprises a first-catch reservoir leading into the valve inlet and a main overflow positioned, in use, at an upper end of the first-catch reservoir, comprising the steps of;

passing liquid into the first-catch reservoir, which then flows into the valve inlet;

5 draining excess liquid through the main overflow when the first-catch reservoir is full; and

after the valve shuts, draining the first-catch reservoir through the valve inlet, the shut-off chamber and the valve overflow.

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16. A valve for a liquid sampler as defined in any of claims 1 to 12.

15 17. A liquid sampler substantially as described herein, with reference to the drawings.

18. A valve substantially as described herein, with reference to the drawings.

20 19. A method for sampling liquid substantially as described herein, with reference to the drawings.

20. A first-void urine sampler comprising;

25 a sample chamber for collecting a first-void urine sample; and

a valve for allowing the sample to enter the sample chamber before the valve closes to divert later-voided urine away from the sample chamber.

30 21. A liquid sampler according to any of claims 1 to 12 further provided with collection means for collecting overflow liquid.

22. A urine sampler according to claim 20 further provided with collection means for collecting diverted later-voided urine

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- 23 A method for collecting a portion of a liquid flow, said portion being other than a first portion of said liquid flow, using a sampler as defined in any of claims 1 to 12 or 20 to 22, comprising the steps of;

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operating the sampler so that liquid initially flows through the valve inlet and then passes through the shut-off chamber and the valve outlet;

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collecting liquid in the sample chamber until it reaches a predetermined level at which the flow of liquid through the valve outlet is disrupted so that it touches and wets the wall of the valve outlet, blocks the valve outlet and shuts the valve, preventing further flow of liquid into the sample chamber;

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diverting further liquid flowing through the valve inlet to flow through the shut-off chamber and the valve overflow; and

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collecting said diverted overflow liquid.

24. A method according to claim 23, in which the predetermined level is at an exit of the valve outlet, the liquid flow being disrupted by the liquid in the sample chamber covering the exit of the valve outlet.

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25. A method according to claim 23 or 24, using a sampler which further comprises a first-catch reservoir leading

into the valve inlet and a main overflow positioned, in use, at an upper end of the first catch reservoir, comprising the steps of;

5 passing liquid into the first-catch reservoir, which then flows into the valve inlet; and

draining excess liquid through the main overflow when the first-catch reservoir is full; and

10 after the valve shuts, draining the first-catch reservoir through the valve inlet, the shut-off chamber and the valve overflow.

15 26. A method for diagnosis comprising the steps of;

collecting a first-void urine sample; and

testing the sample.

20 27. A method for diagnosis of a liquid sample, comprising the steps of;

25 collecting a sample using a sampler as defined in any of claims 1 to 12 or 20 to 22; and

testing the sample to diagnose the presence or absence, or level of an analyte.

30 28. A method according to claim 27 wherein a first-void urine sample is collected.

29. A method according to claim 27 wherein an overflow urine sample is collected.

30. A method according to claim 29 wherein a mid-stream urine sample is collected.
- 5 31. A method according to any of claims 27 to 30 for diagnosis of Chlamydia infection in the source of said sample.
- 10 32. A method according to any of claims 27 to 30 wherein said analyte is a marker for Chlamydia infection in the source of said sample.
33. A method according to any of claims 27 to 30 for Chlamydia diagnosis.